

## *Luriculus minos* (Platyhelminthes: Rhabdocoela: Luridae) from the Canary Islands

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**Abstract.**—Previously known from Crete (Eastern Mediterranean), the statocyst-bearing turbellarian *Luriculus minos* (Sterrer, 1992) was found in subtidal fine sand off the island of Gran Canaria (eastern Atlantic). Of six species of Luridae known, this is the first to be reported from outside its type locality. Significant biometric differences in the sclerotized structures of the reproductive system between the Cretan and Canarian populations suggest that contemporary means of dispersal are sufficient for island colonization, but insufficient to prevent this species from diverging into distinct populations.

Marcus (1950) described the marine microturbellarian *Lurus evelinae* which combined the general organization of Dalyelioida-Provorticidae with the possession of a statocyst, a unique feature that prompted Sterrer & Rieger (1990) to erect the family Luridae. Five additional species have been described to date (Sterrer & Rieger 1990, Sterrer 1992, Faubel et al. 1994), and the ultrastructure of spermiogenesis (Rohde & Watson 1993a), of sensory receptors (Rohde & Watson 1993b), and of the statocyst (Rohde et al. 1993) has been documented. Because *L. evelinae* was described by Marcus as having paired testes as well as separate germaria and vitellaria, Faubel et al. (1994) proposed the genus *Luriculus* for those species that have germovitellaria and a single testis. The family Luridae thus comprises the species *Lurus evelinae* Marcus, 1950, from the Atlantic coast of Brazil; *Luriculus castor* (Sterrer & Rieger, 1990) from the Atlantic coast of the United States; *Luriculus tyndareus* (Sterrer & Rieger, 1990) from Fiji; *Luriculus minos* (Sterrer, 1992) from Crete; and *Luriculus australiensis* Faubel et al., 1994, from New South Wales. *Lurus pollux* Sterrer & Rieger, 1990, also from the Atlantic coast of the United States, remains a *species inquirenda* since

neither its vitellaria nor its testes are known. No species of Luridae has ever been reported outside its type locality.

During a brief collecting trip to Gran Canaria in February 1996 I found specimens that clearly belonged to *Luriculus minos* (Sterrer, 1992) but differed consistently in details of the male copulatory organ. Samples were collected by snorkeling over the shallow bottom and scooping sand into a bucket. Specimen extraction, documentation and analysis follow Sterrer (1971). This study is based on observation of live animals in squeeze preparation.

*Luriculus minos* (Sterrer, 1992)  
(Figs. 1, 2; Table 1)

**Localities.**—Gran Canaria, Las Palmas, Playa de Las Canteras, fine sand with sparse seagrass (*Cymodocea nodosa*) at 2–3 m depth, collected 16 Feb 1996; 5 specimens. Arinaga, harbor basin, fine sand between and in *Cymodocea nodosa* at 4–5 m depth, collected 21 Feb 1996; 9 specimens.

**Description.**—Mature specimens (Fig. 1A) are 245–420  $\mu\text{m}$  long (vs. 275–500  $\mu\text{m}$  in Crete). The statocyst (Figs. 1B, 2C) contained 3 statoliths in 3 specimens and 4 statoliths in one, which gives a mean statolith

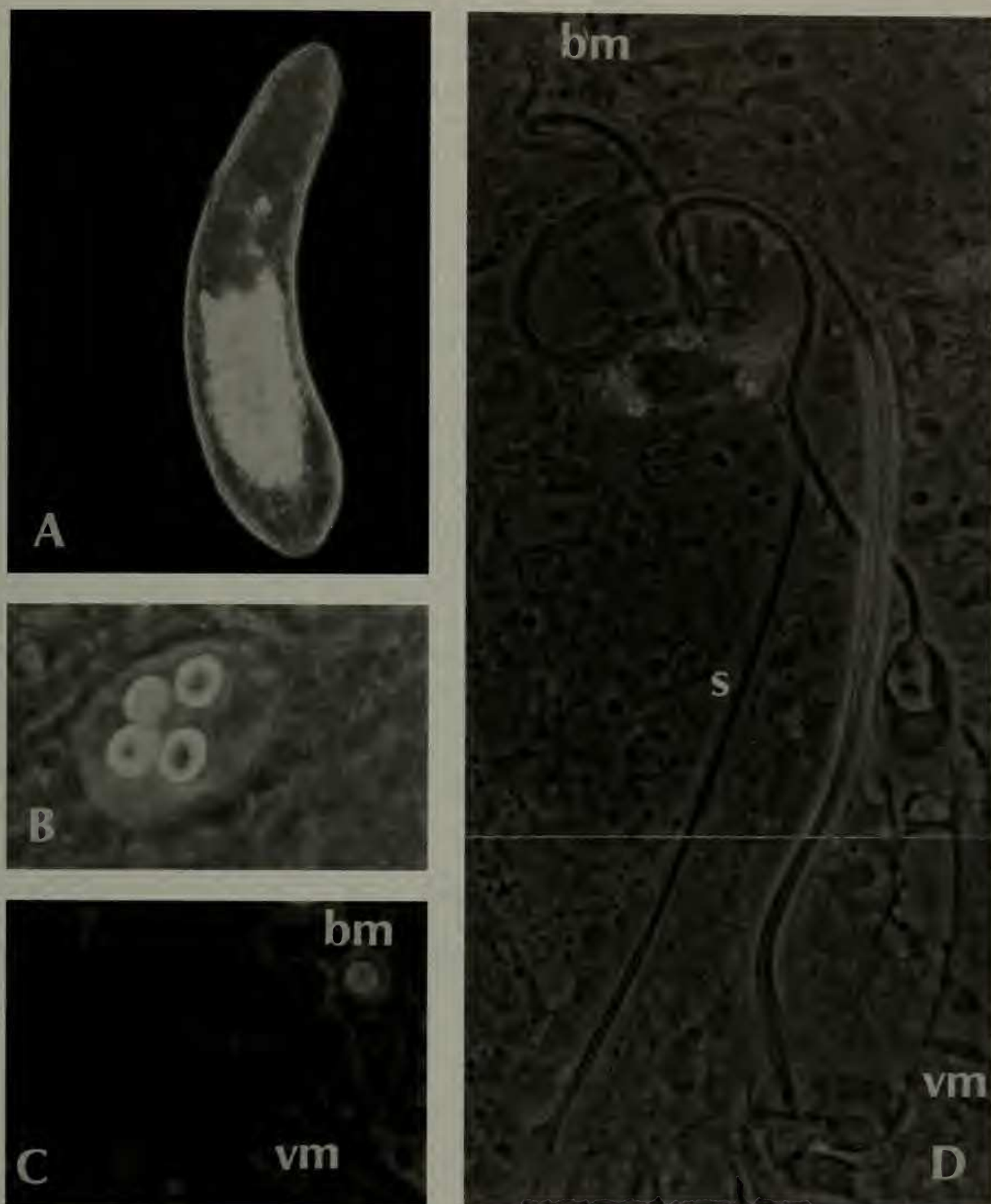


Fig. 1. *Luriculus minos*. A, Habitus of free-swimming adult; B, Statocyst; C, Bursa mouthpiece; D, Sclerotized parts of reproductive system. Phase contrast micrographs of living specimens from Gran Canaria. Abbreviations: bm bursa mouthpiece, pf perforation of vagina mouthpiece, s male copulatory stylet, vm vagina mouthpiece.

number of 3.25 for the sample (3.22 in Crete).

The complex sclerotized structures of the reproductive system, which consist of a

male stylet, a vagina mouthpiece, and a bursa mouthpiece (Fig. 1D), are nearly identical between Cretan and Canarian specimens except for two consistent differences (Table

Table 1. Biometric comparison of vagina mouthpiece of individual specimens from the Canaries and Crete.

Specimens from			
Canaries	1	x ( $\mu\text{m}$ )*	y ( $\mu\text{m}$ )*
	2	13	65
	3	13	62
		13	60
	Mean	13.00	62.33
Crete		x' ( $\mu\text{m}$ )**	y' ( $\mu\text{m}$ )**
	1	22	52
	2	21	52
	3	19	50
	4	20	51
Mean	20.50	51.25	

\* See Fig. 2A.

\*\* See Fig. 2B.

1). The distal, funnel-shaped portion of the vagina mouthpiece (Fig. 2A; y) is 60–65  $\mu\text{m}$  (mean 62.33  $\mu\text{m}$ ) long in Canarian specimens but only 50–52  $\mu\text{m}$  (mean 51.25

$\mu\text{m}$ ) in those from Crete (Fig. 2B; y'). The "lateral perforation" is 13.0  $\mu\text{m}$  long in Canarian specimens (Fig. 2A; x) vs. 19–22  $\mu\text{m}$  (mean 20.5  $\mu\text{m}$ ) in Cretan specimens (Fig. 2B; x'). The distal width is the same in both populations. An additional yet less consistent difference is that the distal end of the male stylet, a prominent papilla made up of concentric rings, reemerges from the vagina mouthpiece not straight, as in most Cretan specimens, but always bent at a 90° angle. The proximal end of the vagina mouthpiece flares into a shallow saucer into which the bursa mouthpiece also opens. Shaped like a roll of unequal-sized coins, the bursa mouthpiece is considerably more robust in Canarian than in Cretan specimens (Figs. 1C, 2D–F).

*Discussion.*—Global distribution and speciation of marine interstitial sand fauna continue to pose the paradox of a high degree of taxonomic uniformity, including ap-

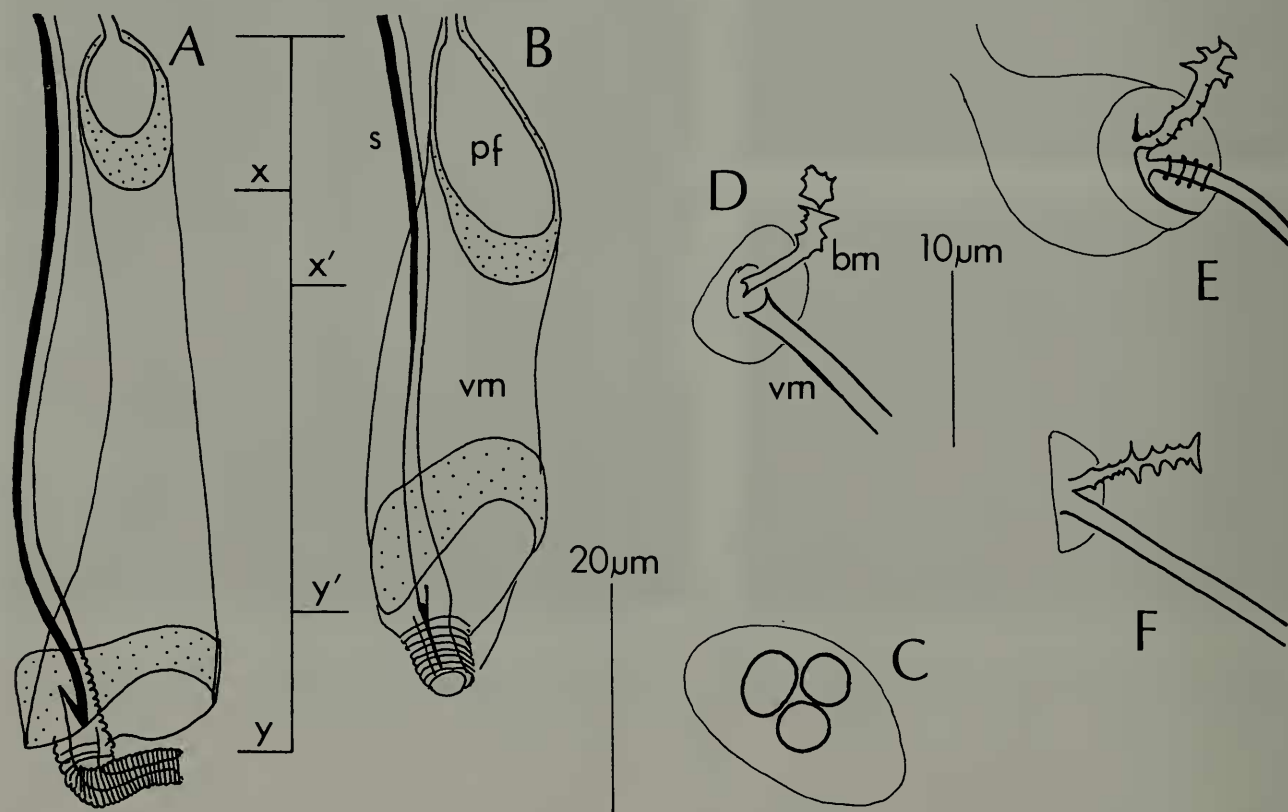


Fig. 2. *Luriculus minos*. A, distal portion of vagina mouthpiece of a specimen from Gran Canaria; B, the same of a specimen from Crete; C, statocyst; D–F, proximal end of vagina mouthpiece (vm) and bursa mouthpiece (bm) of 3 specimens from Gran Canaria. The scales apply to A–C and D–F, respectively. Abbreviations: bm bursa mouthpiece, pf perforation of vagina mouthpiece, vm vagina mouthpiece; x, y and x', y' indicate distances measured (see Table 1).

parent cosmopolitan species, combined with the absence of a ready dispersal mechanism. Some authors consider contemporary means of dispersal—such as passive water-column transport, rafting on drifting objects, or clinging to “marine snow”—as sufficient to explain all existing patterns (Giere 1993), whereas others invoke plate tectonics, coupled with very slow speciation rates, as the primary vector for global distribution (Sterrer 1973). Differences between populations of *Luriculus minos* at Crete and the Canary Islands suggest that contemporary means of dispersal must have been sufficient for this species to colonize islands such as Crete and the Canaries, but not powerful enough to prevent its fragmentation into significantly different populations.

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#### Literature Cited

- Faubel, A., K. Rohde, & N. A. Watson. 1994. Sandy beach meiofauna of Eastern Australia (Southern Queensland and New South Wales). II. *Luriculus australiensis*, gen. et sp. nov. (Luridae: Dalyelliida: Platyhelminthes).—*Invertebrate Taxonomy* 8:1009–1015.
- Giere, O. 1993. *Meiobenthology*. Springer-Verlag, Berlin, 328 pp.
- Marcus, E. 1950. Turbellaria Brasileiros (8).—*Boletins da Faculdade de filosofia, ciências e letras, Universidade de São Paulo (Zoologia)* 15:5–191.
- Rohde, K., & N. A. Watson. 1993a. Ultrastructure of spermiogenesis and sperm of an undescribed species of Luridae (Platyhelminthes: Rhabdocoela).—*Australian Journal of Zoology* 41:13–19.
- . 1993b. Ultrastructure of sensory receptors of an undescribed species of Luridae (Platyhelminthes: Rhabdocoela).—*Australian Journal of Zoology* 41:53–65.
- , & A. Faubel. 1993. Ultrastructure of the statocyst in an undescribed species of Luridae (Platyhelminthes: Rhabdocoela: Luridae).—*Australian Journal of Zoology* 41:215–224.
- Sterrer, W. 1971. On the biology of Gnathostomulida.—*Vie et Milieu, Suppl.* 22:493–508.
- . 1973. Plate tectonics as a mechanism for dispersal and speciation in interstitial sand fauna.—*Netherlands Journal of Sea Research* 7: 200–222.
- . 1992. *Lurus minos*, the first species of Luridae (Turbellaria: Rhabdocoela) from the Old World.—*Proceedings Biological Society Washington* 105:636–639.
- , & R. M. Rieger. 1990. New species of the statocyst-bearing marine dalyellioid genus *Lurus* Marcus (Luridae nov. fam., Turbellaria-Rhabdocoela).—*Cahiers de Biologie Marine* 31:485–500.